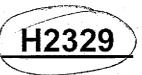
VALIDATION REPORT

SAF NUMBER F03-006

SDG NUMBER H2329



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Data	Package H2329	Groundwater Protection Program/200-PW-2		Doris Ayres	BIS Sam		A0-	
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3	Radiochemistry - Laboratory QC sl [pages 11 -16 of original data pa			Rejectedi Th				
4	Pesticides - Page 1; In the heade the SDG number is H2329. The "C" data by sample management so the easily. Please remove the "C".	is added to the scanned		Accepted			Marie and Marie	/
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			3. Project No. 200-PW-2	4, Page 2 of	2
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	General Chemistry - Page 13. This is the narrative from scanned file H2329C. The narrative from scanned file H2329C2 needs to be included. In addition please be sure that the appropriate chains of custody are included. Sample Management is aware that the Case Narrative in scanned file H2329C2 is not signed. We have requested a signed copy from the laboratory.		The correct marration was a superior of available.	illboured,	/

ORP (02/0		NT RECORD (RCR)		3. Project	Dec 9, No. 00-PW-2		2. Review No. 4. Page	n/a	2
5. Doc	cument Number(s)/Tibe(s)	6. Program/Project/Building Number		7. Reviewer		8. Organization		9. Location	r/Phone
Data	Package SDG W2329	Groundwater Protection program/200-PW-2 & 4 0		Bill Thackaber	crv	Env & Sci Assurance	,		-35 -0742
17. C	omment Submittal Approval Organization Manager (optional)	10. Agreement with indicated comme	Additional to a framework and the first of the		11. CLOSI	o 4	Marla E Reviewer/Pol	ery nt of contac	
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9	Radiochemistry - pg 31 Checklist item 9 incomplete.		Checkbot complet	tal	
10	Radiochemistry - pg 32 Checklist item 11 incomplete:		<i>V.</i> ,		~
11	Radiochemistry - pgs 10-33 please discourage the validator from submitting reduced size data sheets.		Attachments will be	enlarged.	~
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* Manager des

Date:

12/12/03

To:

Fluor Hanford

From:

EQM, Inc.

Project:

200 Area Source Characterization 200-PW-2 & 4 Operable Unit

Subject:

Pesticides Analysis-Data Package SDG H2329

INTRODUCTION

This memo presents the results of Data Validation on Data Package SDG H2329 prepared by Lionville Laboratory, Inc. (LLI) for Pesticides. A list of samples validated along with the analysis reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B17HR9	9/3/03	Soil	С	8081&
				extraction 3540
B17HX4	9/3/03	Soil	С	8081&
				extraction 3540
B17HX8	9/3/03	Soil	C	8081&
				extraction 3540
B17HX9	9/3/03	Soil	C	8081&
•				extraction 3540
B17HY4	9/4/03	Soil	C	8081&
				extraction 3540
B17J02	9/3/03	Soil	С	8081&
				extraction 3540

Note that of the 10 samples submitted, pesticides were requested on six samples.

Data validation was conducted in accordance with the BHI Validation Procedure for Chemical Analysis, BHI-01435, and Sampling and Analysis Plan, DOE/RL-2000-60, Rev. 1. Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualifiers
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain of Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by the Client (not applicable)

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times for Pesticides Analysis is 14 days to extraction and 40 days to analysis.

All holding times were met.

Method Blanks

At least one method blank per analytical batch of samples was analyzed. It consisted of deionized distilled water and was processed through each set of the sample preparation and analysis procedure.

All method blanks fell within acceptable limits.

· Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix spike analyses were used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least once per batch of samples, using the same procedures as samples and added as early in the sample preparation process as possible.

Matrix spike recoveries must fall within the range of 50-150% per BHI-01435. No MS recoveries were specified in the SAP.

The matrix spike and matrix spike duplicate for sample B17HR9 were out of control limits for delta-BHC, Endosulfan Sulfate and Endrin Aldehyde.

Surrogates

Surrogate recovery for sample B17HR9 is outside of control limits of 50-150%.

Sample is flagged with "UJ".

Laboratory Control Samples (LCS)/Blank Spike Sample (BSS)

BSS /LCS are also a measure of accuracy. Blank spikes or LCS recoveries must be within 50-150%.

BSS was out of control for delta-BHC, endosulfan sulfate and endrin aldehyde. All associated samples must be flagged with a "UJ" for those compounds.

Precision

Matrix Spike/Spike Duplicate

Matrix spike duplicate samples are used to measure laboratory precision and sample homogeneity. Results must be within a relative percent difference (RPD) of $\leq 35\%$ for non-aqueous samples that have a concentration of >5 times the RDL.

% RPD for sample B17HR9 is out of control for endosulfan sulfate.

Samples do not need to be flagged because they are all non-detects; however, they have already been flagged for other reasons (see previous sections).

Field Duplicate Samples

No field duplicate samples were analyzed for pesticides in this SDG.

Analytical Detection Limits

No pesticide reporting limits are presented in the SAP.

All required detection limits were met.

Completeness

The data package for SDG: H2329 was submitted for validation and verified for completeness. Completeness was based on the number of data determined to be valid.

The completeness percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

See matrix spike, blank spike and precision sections.

REFERENCES

BHI 01435. Rev 0, Validation Procedure for Chemical Analysis

DOE-RL2000-60, Rev. 1 (redline version 4/23/03), Uranium-Rich/General Process Condensate and Process Waste Group Operable Units RI/FS Work Plan and RCRA TSD Unit Sample Plan-Includes 200-PW-2 and 200-PW-4 Operable Units.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI 01435 and BHI 01433.

- U Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.
- J Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.
- BJ Applied to inorganic analyses only. Indicates that the analyte concentration is Greater than the IDL but less than the CRDL and is considered an estimate.
- R Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e. usable for decision making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e. usable for decision making purposes).

Appendix 2

Summary of Data Qualifiers

DATA QUALIFICATION SUMMARY

SDG: H2329C	REVIEWER: MAH/MSM	DATE: 11/18/03, 11/22/03	PAGE 1 OF 1
COMMENTS:			
SAMPLES	QUALIFIER	COMPOUND	REASON
AFFECTED			
B17HR9	UJ	All	Surrogate
B17HR9	UJ	Delta BHC	Matrix Spike
B17HX4		Endosulfan sulfate	Blank spike
B17HX8		Endrin aldehyde	
B17HX9			
B17HY4			
B17J02			

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

10

Toxaphene

Lionville Laboratory, Inc. Pesticide/PCBs by GC, CLP List

Report Date: 09/30/03 13:47

Client: TNUMANFORD F03-006 R2329 Work Order: 11343606001 Page: 1 RFW Batch Number: 03091404 B17E29 B17HR9 D17ER9 B17HX4 **D17RI8** B17HX9 Cust ID: ODE MS OOL MED 004 007 008 RPW#: 001 Sample SOIL SOIL Information Macrix: SOLL SOLL SOIL SOIL D. P. z 1.00 1.00 1.00 1.00 1.00 1.00 UG/KO UG/XG UG/KG UG/KG DG/KG UG/KG Units: 90 90 30 85 Surrogate: Tetrachioro-m-xylene 40 80 Val. 1 95 Valid 95 Decachlorobiphenyl 95 105 45 * 化1人 mesessef1 U T U.S 60 1.8 U 1.9 19 Alpha-BHC 1.8 70 1 9 U t w t 60 * ¥ 1.8 U 1.9 U Beta-BHC 1.8 50 * 1 UUJ vu, j 1.9 0 4.1 1.9 U 4, 1 15 * * Delta-BHC 1.8 15 * * 8.I 1.8 U 1.9 U 55 damma-BHC (Lindane) 1.8 70 1.8 1.9 Heptachlor U 85 95 1.8 U IJ 1.9 1.8 UKI 75 1.0 U 1.9 U 1.9 Aldrin 70 Heptachlor epoxide 90 1.8 1.9 U 1.9 1.8 80 U 125 1.9 1.8 U Endosulian I 115 100 3.6 U 3.7 0 3.7 Dieldrin 90 4-4'-DDR 3.6 110 110 3.6 U 3.7 U 3.7 110 125 U. Endrin ់ប 3.7 3.6 Endosulfan II 70 3.6 U 3.7 3.7 65 95 3.6 U 3.7 4 - 4' - DDD 80 3.7 U U 3.6 ប្រហ្វ ₽, J Endosulfan sulfate 30 70 3.6 υ 3.7 3.7 IJ 95 4.4' -DDT 3.6 3.7 3.6 80 Methoxychlor 18 135 * 18 Ð. 19 115 U 19 11 Endrin ketone 85 3.6 U 3.7 U 3.7 U Ü 75 บ เม o ic i 1 I *D 14. U Endrin aldehyde 3.6 U 3.6 3.7 3.7 125 alpha-Chlordane 1.8 115 1.8 U 1.9 Ü 1.9 gamma-Chlordane 85 95 1.8 U 1.9 1.8 U 1.9

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. *= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

360 U

180 יט 🤄 190

U

350 U

180

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List Report Date: 09/30/03 13:47

RPW Batch Number: 03091404 Cust ID: . **B17874** B17J02 POLKET PALKET BS 010 03LE1103-MB1 03LE1103-MB1 Sample. RFW# : 009 Information Marrix: SOIL SOIL SOIL SOIL 1.00 1.00 1.00 1.00 D.F .: VELIC UG/KG UG/KO DG/KG Unice: UG/KG Tetrachloro-m-xylene 90 90 **95** 95 . ¥ Surrogate: 95 \$ 95 110 * Decachlorobiphenyl 110 ========£1=====£1 Alpha-BHC 1.8 1.8 1.7 U 70 Beta-BHC 1.8 U 1.6 U 1.7 U 80 1.8 UW.J 1.6 0 4, 5 Delta-BHC 1.7 10 * 1.8 Ü gauma-BHC (Lindane) 1.8 1.7 55 1.8 U 2.7 95 Heptachlor 1.8 Aldrin 1.8 1.0 U 1.7 80 Hentschlor epoxide 1.8 1.8 1.7 90 Bndosulfan I 1.8 1.7 145 1.8 Dieldrin 3.7 U 3.3 100 4 . 4' -DDB 3.5 3.7 3,3 140 Endrin 3.7 125 3.5 3.3 Endosulfan II 3.5 3.7 3.3 90 4 . 4' -DDD 3.5 3.7 70 3.3 Endosulfan sulfate 3.5 20 4 . 4' -DDT 3.5 ซ 3.7 3.3 60 Methoxychlor 18 Ü 18 Ü 125 17 3.5 U Endrin ketone 3.7 3.3 90 Bndrin aldehyde 3.5 ti: 3.7 U 3.3 Ü 40 alpha-Chlordane 1.8 U 1.8 U 1.7 U 125 .gamma-Chlordane_ 1.8 U 1.8 1.7 U 95 180 180 170 U 170 Toxaphene_

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. t= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

18/1/2

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Lionville Labs, Inc.

Contract: 1343-06-01

Case No.: TNUHANFORD P03-006 H2329

RFW Lot No.: 03091404-001

MATRIX Spike - Sample No.: B17HR9

Level: (low/med) LOW

	SPIXE	Sample	MS	MS	QC
	ADDED		CONCENTRATION	*	LIMITS
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	REC
Alpha-BitC	14.4	0	10.1	70	170 -130
Beta-BHC	14.4	0	7.22	50 *	70 -130
Delta-BHC	14.4	0	2,16	15 +	70 -130
yamma-BHC (Lindane)	14.4	0	10.1	70	30 -125
Heptachlor	14.4	0	12.3	85	37 -126
Vidri n	14.4	i o	10.1	70	27 -133
Meptachlor epoxide	14.4	0	11.5	80	70 -130
Endosulfan I	14.4	0	16.6	115	70 -130
Dieldrin	14.4	i o	13.0	90	40 -125
4,4'-DDE	14.4	Ö	15.9	110	70 -130
Sn dri n	14.4	0	15.9	110	45 -130
Endosulfan II	14.4	0	9.38	65 *	70 -130
4,4'-DDD	14.4	0	11.5	80	70 -130
Endosulfan sulfare	14.4	0	4.33	30 *	70 -136
4.4'-DDT	14.4	σ	11.5	80	33 -123
Mothoxychlor	14.4		16.6	115	70 -130
Endrin ketone	14.4	0	10.8	75	70 -130
Endrin aldehyde	14.4	ĺ	1 0	1	70 -130
alpha-Chlordane	14.4	0	16.6	115	70 -130
gamma-Chlordane	14.4	i o	12.3	85	70 -130

СОМРОДИЮ	SPIXE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD * REC #	e RPD #	QC) RPD	LIMITS RBC
Aphs-BKC	14,4	11.5	80	13	20	70 -130
leta-BHC	14.4	8.66	60, *	18	20	70 -130
helta-BHC	14.4	2.16	15 *	0	20	70 -131
yamma-BHC (Lindane)	14.4	7.94	55	24	50	30 -12
leptachlor	14.4	13.7	95	11	31	37 -12
Udrin	14.4	10.8	75	6	43	27 -13
Septachior epoxide	14.4	13.0	90	11	20	70 -13
ndosulfan I	14.4	18.0	125	8	20	70 -13
Dieldrin	14.4	14.4	100 .	70	38	40 -12
,4'-DDE	14.4	15.9	110	0	20	70 -13
indrin	14.4	18.0	125	12	45	45 -13
indosulfen II	14.4	10.1	70	7	20	70 -13
1,4*-000	14.4	13.7	95	17	20	70 -13
Indosulfan sulfate	14.4	10.1	70	80 *	20	70 -13
1,4'-DDT	14.4	13.7	95	17	50	33 -12
ethoxychlor	14.4	19.5	135 *	16	20	70 -13
Endrin ketone	14.4	12.3	85	12	20	70 -13
Endrin aldehyde	14-4	0	I	. 0	20	70 -13
alpha-Chlordane	14.4	18.0	125	. 8	20 .	70 -13
gamma-Chlordone	14.4	13.7	95	11	20	70 -13

[#] Column to be used to flag recovery and RPD values with an asterisk

SOIL PESTICIDE MATRIX SPIKE RECOVERY

Lab Name: Lionville Labs. Inc.

Contract: 1343-06-01

Case No.: TNOHANFORD F03-006 H2329

RFW Lot No .: 0309L404

MATRIX Spike - Sample No.: PELKETLE1103-MB1

Level: (low/med) LOW

COMPOUND	SPIRE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS * RBC #	QC LIMITS REC
Aloha-BHC	6.67		4.67	70	70 -130
Beta-BHC	6.67	0	5.33	. 80	70 -130
Delta-BHC	6.67	0	0.667	10 *	70 -130
gamma-BHC (Lindane)	6.67	0	3.67	55	30 -125
Heptachlor	6.67	0	6.33	95	37 -126
Aldrin	6.67	0	5.33	80	27 -133
Heptachlor epoxide	6.57	0	6.00	90	70 -130
Endosulfan I	6.67	0	9.67	145 *	70 -130
Dieldrin	6.57	0	6.67	100	40 -125
4.4'-DDE	6.67	0	9.33		70 -130
Endrin	6.57	0	8.33	125	45 -130
Endosulfan II	6.67	0	5.00	90	70 -130
4,4'-DDD	6.67	0	4.67	70	70 -130
Rndosulfan sulfate	6.67	0	1.33	.20 *	70 -130
4,4'-DDT	6.67	1	4.00	50	33 -123
Methoxychlor	6.67	1 0	8.33	125	70 -130
Endrin ketone	6.67	0	6.00	90	70 -130
Endrin eldehyde	6.67	0	2,67	40 -	70 -130
alpha-Chlordane	6.67	1 0	8.33	125	70 -130
gamma-Chlordane	5.67	. 0	5.33	95	70 -130
				<u> </u>	l

[#] Column to be used to flag recovery value with an esterisk * Values outside of QC limits

Spike Recovery: _5 out of 20 outside limits

COMMENTS:

5/88 Rev.

Appendix 4

Laboratory Narrative and Chain of Custody Documentation



Analytical Report

Client: TNU-HANFORD F03-006

LVL#: 0309L404

SDG/SAF#: H2329/F03-006

W.O.#: 11343-606-001-9999-00

Date Received: 09-06-03

PESTICIDE

The set of samples consisted of six (6) soil samples collected on 09-03,04-03.

The samples and their associated QC samples were extracted on 09-09-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-26-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- All results presented in this report are derived from samples that met LvLl's sample acceptance
 policy.
- 2. All required holding times for extraction and analysis have been met.
- The samples and their associated QC samples received a Sulfur cleanups.
- The method blank was below the reporting limits for all target compounds.
- All surrogate recoveries were within acceptance criteria.
- 6. Five (5) of twenty (20) blank spike recoveries were outside acceptance criteria.

Seven (7) of forty (40) matrix spike recoveries were outside acceptance criteria.

Insufficient control data was collected to establish control limits. The defaulted detection limits of 70-130% are used for the acceptance criteria. Copies of the form 3F are included in this report.

A copy of the Sample Discrepancy Report (SDR) has been enclosed.

All initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

208 Welsh Pool Road • Exton, PA 19341-1313 • (610) 280-3000 • Fax (610) 280-3041

つ

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of the target compounds listed on the calibration verification summaries included in this report. No target compounds were found in these samples.

No closing continuing calibration verification (CCV) standards were collected due to instrument failure. The surrogate recoveries were within acceptance criteria indicating no drop in instrument response, so the ability to detect the target compounds was not affected.

A copy of the SDR has been enclosed.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

perfulgroup/data/pest/tou hanford/09L-404.pes

IVLI

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FU3-000-242

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Price Code 8N

Air Quality [

None.

Project Coordinator TRENT, SJ

Method of Shipment Federal Express

Cool 4C

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Bill of Lading/Air Bill No.

None

aG

SAF No. F03-006 take I or I

Data Turnaround

45 Days

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FH-Central Plateau Project

Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling

Shipped To
EBERLINE SERVICES (Formerly TMA)

Special Handling and/or Storage

POSSIBLE SAMPLE HAZARDS/REMARKS

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cool4°C

Collector

lee Chest No.

Pope/Pfister/Hughes

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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

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Cool 4C

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Telephone No. 373-3928

Company Contact
LC Hulstrom

Field Logbook No. INF-N-3361

Offsite Property No.

Sampling Location 200-PW-4/Retention Basin ---

Preservation

Type of Container

No. of Container(s)

Section 15

Officior Pore/Pfejen/Highes		Company Co	Company Confact	Telephone No. 373-3928		-	Proj.	Project Coordinator TRENT, SJ	Price Code	ode 8N		Data Turnaround	
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Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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2. INSTRU Initial calibrations Continuing calibra Standards traceabl Standards expired Calculation check	acceptable?		99 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		Yes No N/ Yes No N/ Yes No N/ Yes No N/
2. INSTRU- Initial calibrations Continuing calibra Standards traceabl Standards expired Calculation check DDT and endrin b	acceptable? tions acceptable? acceptable? acceptable? reakdowns accepta	**************************************	99 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	**************************************	Yes No N/ Yes No N/ Yes No N/ Yes No N/
2. INSTRU- Initial calibrations Continuing calibra Standards traceabl Standards expired Calculation check DDT and endrin b	acceptable? tions acceptable? acceptable? acceptable? reakdowns accepta	**************************************	10	**************************************	Yes No N/ Yes No N/ Yes No N/ Yes No N/
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	south to which extends
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Yes No W	Performance audit sample results accordable?
Ye No (NA)	Performance makin rample(s) analyzed?
(VIN) ON 52X	Standards expired? (Levels D, E)
(A/N) ov say	Sandards traceable? (Levels D, E).
AM (oN) 22Y	Swiftermore attende 2250.27.1
VN ON FX	LCS/8555 samples analyzed?
	MS/MSD standards crapined? (Levels D, E)
	MSMSD standards NIST traccable? (Lewis D, E)
AW (ch) DY	NS/MSD results acceptable?
VN ON EX	Thorsylene soldmiss CISIA/SM
AW ON BOY	Surrogates expired? (Levels D. E)
(AN) oN 25Y	Surrogator traccable? (Levels D, E)
AW (CK) 237 minutes and a second seco	Saldardoose tercovost diagottic
AN ON (SY)	Secretaria satagonal
	4. ACCURACY (Levels C, D, and E)
	Contractite
	Transcription/cakeulation errors? (Levels D, E)
(VIN ON PX	Field/mip blank results acceptable? (Levels C, D, E)
(AV) ON SX	Field/trip blanks analyzed? (Levels C. D. E)
A/N oN (SY)	Laboratory blank results acceptable?
AN ON (DY)	Charylane aleafd violerode I
(AIN) of any	Calibration blank results acceptable? (Levels D, E)
(NN) oN SEX	Calibration blanks analyzed? (Lovels D, E)
	3. BLANKS (Levels B, C, D, and E)

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PESTICIDE/PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)	
Deplicate RPD values acceptable?	Yos No N/A
Deplicate remits acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	YES NO (NA)
MS/MSD standards expired? (Levels D, E)	Yes No (N/A)
Field deplicate RPD values acceptable?	Yes No (N/A)
Field spin RPD values occeptable?	Yes No NA 128/
Transcription/galculation errors? (Levels D. E) Commonton: 4 rajel. B17 HR9 M5 fell butterile of Q	Yes No NA Day
for B. BHC, d-BHC Endosulfer IT, Endosu and Indrin aldihiple. To RPD was entired control limits for	Afar sulfite with
rendosulla sulfate	
6. SYSTEM PERFORMANCE (Lovels D and E)	
Chromatographic performance acceptable?	Yes No (N/A)
Positive results resolved acceptabily?	>
Comments:	
7. HOLDING TIMES (all levels)	
Samples properly preserved?	(Es)No NA
Sample holding times acceptable?	
Comments:	

PESTICIDE/PCB DATA VALIDATION CHECKLIST

ompound identification acceptable? (Levels D, E)	Ves No N/A
onpound quantitation acceptable? (Levels D, E)	
could reported for all requested analyses?	V- No NVA
results supported in the raw data? (Levels D, E)	Ven No 2018
suples properly prepared? (Levels D. E)	Yes No N/A
election limits meet RDL?	
ranscription/calculation errors? (Levels D, E)	
ommens: NO Report lit in SAP	
SAMPLE CLEANUP (Levels D and E)	
banicil & (or other aborbant) cleanup performed?	Yes No (NA
of check performed?	Yes No NA
heck recoveries aceptable?	Yes No WA
PC cleanup performed?	Yes No XIA
PC check performed?	
PC check recoveries aceptable?	
PC calibration performed?	Yes No (NA)
PC calibration check performed?	Yes No NA
PC calibration check retention times acceptable?	
beck/colibration materials traceable?	
heck/calibration materials Expired?	
nalytical batch QC given similar cleantp?	
ranscription/Calculation Errors?	Yes No NA
OURIETÉS.	
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Appendix A – Data Validation Checklists

BHI-01435 Rev. 0

	PESTICIDE/PCB DA	TA VALIDATIO	ON CHECKLI	ST
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Date:

11/19/03

To:

Fluor Hanford

From:

Project:

EQM, Inc.
200 Area Source Characterization 200-PW-2 & 4 Operable Units, Section 200-PW-2 & 500 H2329

Subject:

Chlorinated Herbicides Analysis-Data Package SDG H2329

INTRODUCTION

This memo presents the results of Data Validation on Data Package SDG H2329 prepared by Lionville Laboratory, Inc. (LLI) for Chlorinated Herbicides. A list of samples validated along with the analysis reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B17HR9	9/3/03	Soil	С	8151A
B17HX4	9/3/03	Soil	С	8151A
B17HX8	9/3/03	Soil	С	8151A
B17HX9	9/3/03	Soil	С	8151A
B17HY4	9/4/03	Soil	С	8151A
B17J02	9/3/03	Soil	С	8151A

Note that out of 10 samples submitted, herbicides were requested on six.

Data validation was conducted in accordance with the BHI Validation Procedure for Chemical Analysis BHI-01435 and Sampling and Analysis Plan, DOE/RL-2000-60, REV1. Note that no herbicide analyses were specified in the SAP, thus the default limits from the BHI-01435 were used for validation. Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualifiers
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain of Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by the Client- not applicable

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times for Pesticides Analysis is 14 days to extraction and 40 days to analysis.

All holding times were met.

Method Blanks

At least one method blank per analytical batch of samples was analyzed. It consisted of deionized distilled water was processed through each set of the sample preparation and analysis procedure.

All method blanks fell within acceptable limits.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix spike analyses were used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least once per batch of samples, using the same procedures as samples and added as early in the sample preparation process as possible.

Matrix spike recoveries must fall within the range of 50-150%.

Sample B17HX8 is outside of control limits for dicamba, 2,4,5T, 2,4-DB, and dalapon, and needs to be flagged with "UJ". Based on the supporting information to the case narrative only the sample spiked was flagged.

Surrogate Recovery

Surrogates are also used to assess the accuracy of the method. Surrogate recoveries should be between 50 and 150%.

Surrogate recovery for sample B17HR9 is out of control and the sample needs to be flagged with "UJ".

Laboratory Control Samples (LCS)/Blank Spike Sample (BSS)

BSS / LCSs are also a measure of accuracy. Blank spikes or LCS recoveries must be within 50-150%.

All BSS met acceptable limits.

Precision

Matrix Spike Duplicates

Matrix spike duplicate samples are used to measure laboratory precision and sample homogeneity. Results must be within a relative percent difference (RPD) of $\leq 35\%$ for non-aqueous samples that have a concentration of >5 times the RDL.

The matrix spike duplicate requirements were met for all analytes.

Field Duplicate Samples

No field duplicate samples were analyzed for herbicides in this SDG.

Analytical Detection Limits

No reporting limits were presented in the Sampling & Analysis Plan, DOE/RL-2000-60, Rev 1.

All required detection limits were met.

Completeness

The data package for SDG: H2329 was submitted for validation and verified for completeness. Completeness was based on the number of data determined to be valid. The completeness percentage was 100%

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Bechtel Hanford, Inc., Validation Procedure for Chemical Analysis, BHI-01435. Rev 0, Richland, Washington, 2000

U. S. Department of Energy, *Uranium-Rich/General Process Condensate and Process Waste Group Operable Units RI/FS Work Plan and RCRA TSD Unit Sample Pan-Includes 200-PW-2 and 200-PW-4 Operable Units*, DOE-RL-2000-60, Rev. 1, Richland, Washington, 2000.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI 01435 and BHI 01433.

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

BJ – Applied to inorganic analyses only. Indicates that the analyte concentration is Greater than the IDL but less than the CRDL and is considered an estimate.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

NJ – Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e. usable for decision making purposes).

N – Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e. usable for decision making purposes).

Summary of Data Qualifiers

DATA QUALIFICATION SUMMARY

SDG: H2329C	REVIEWER: MAH/MSM	DATE: 11/18/03, 11/22/03	PAGE 1 OF 1
COMMENTS:			
SAMPLES AFFECTED	QUALIFIER	COMPOUND	REASON
B17HX8	UJ	dicamba, 2,4,5T, 2,4-DB and dalapon	Matrix spike
B17HR9	UJ	All herbicides	surrogate

Qualified Data Summary and Annotated Laboratory Reports

Herbicides, Special List

Client: THURANFORD #03-006 H2329 Work Order: 11343606001 Page: 1.

B17HX8 B17HX9 Cust ID: B17ER9 B17HX4 BL7EE8 BI7RX8 001 800 007 007 MS Sample RPW#: 004 007 MSD SOIL Information SOIL SOIL SOIL SOIL Matrix: SOIL 1.00 1.00 1.00 D.F .: 1.00 1.00 1.00 ug/kg Valid ug/kg Units: ug/kg ug/kg ug/kg ug/kg 69 Surrogate: DCAA 49 77 8 70 % 51 57 =====fl semmenfl esementimes warrenflaam= 180 U W 190 190 42 * 46 Dalapon 180 U us 72 U 180 U 75 U v uj * * Dicamba 73 U 74 10 * 14 113 53 46 190 U Dichloroprop 180 U 190 4.1 37 U 36 Ú 2,4-0 36 U 7.1 J 41 43 us 1.8 Ù 69 2.4.5-TP (Silvex) 19 62 29 3.3 Ű, ข แว 13 U UJ 37 + 1 19 45 19 U 2.4.5-7 18 U 180 U iL لين لا 190 42 * 48 180 U 190 U 2.4-DB Dinoseb UU 18 18 U 19 U 49 61 19 U

	Cust ID:	B17HY4	B17J02	PBLKFU	PBLKFT BS	
Sample Information	RFW#: Matrix: D.P.: Units:	009 SOIL 1.00 ug/kg	010 SOIL 1.00 ug/kg	03CE1155-HB1 SOIL 1.00 ug/kg	036 21135-M91 SOIL 1.00 ug/kg	
Surrogate:	DCAA	42 4	62 %	76 1	97 1	
Dalapon Dicamba Dichloroprop 2,4-D 2,4,5-TP (Silvex) 2,4,5-T 2,4-DB Dinoseb		180 U 70 U 180 U 35 U 18 U 18 U 180 U	180 U 73 U 180 U 97 U 18 U 18 U 180 U	170 U 67 U 170 U 33 U 17 U 17 U 170 U	53	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank, NR= Not reported. NS= Not spiked. *- Percent recovery. D- Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Report Date: 09/30/03 15:06

RFW Batch Number: 03091404

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Lionville Dabs. Inc.

Contract: 1343-06-01

Case No.: TNUHANFORD F03-006 H2329

RFW Lot No.: 0309L404-007

MATRIX Spike - Sample No.: B17HX8

Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS t REC #	OC LIMITS RBC
Delapon	928	0	393	42 *	50 -150
Dicamba	371	1 0	36.0	10 *	50 -150
Dichloroprop	928		491	53	50 -150
2,4-D	186	7,06	82.5	41	41 -144
2,4,5-TP (Silvex)	92.8	0	57.6	62	42 -148
2,4,5-T	92.8	. 0	34.2	37 *	60 -143
2,4-DB	928	1 0	388	42 *	60 -160
Dinoseb	186	0	91.0	49	20 -100

СОМЪОДИД	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD † RBC.#	t RPD #	OC RPD	LIMITS REC
Delapon Dicamba Dichloroprop 2,4-D 2,4,5-TP (Silvex) 2,4,5-T 2,4-DB Dinoseb	928 371 928 186 92.8 92.8 92.8 928 186	429 50.1 429 86.5 63.9 41.6 445	46 * 14 * 46 * 43 * 45 * 48 * 61	9 33 14 4 10 19 13 21	200 200 200 200 200 200 200 200	50 -150 50 -150 50 -150 41 -144 42 -148 60 -143 60 -160 20 -100

[#] Column to be used to flag recovery and RPD values with an asterisk * Values outside of QC limits

RPD: _0 out of _8 outside limits
Spike Recovery: _9 out of 16 outside limits

COMMENTS:

5/88 Rev.

Laboratory Narrative and Chain-of-Custody Documentation



Client: TNU HANFORD F03-006

LVL#: 0309L404

SDG/SAF#: H2329/F03-006

Analytical Report

W.O.#: 11343-606-001-9999-00 Date Received: 09-06-03

HERBICIDE

The set of samples consisted of six (6) soil samples collected on 09-03.04-03.

The samples and their associated QC samples were extracted on 09-16-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-18,26-03. The extraction and analysis procedure was based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LVLI's sample acceptance policy.
- 2. All required holding times for extraction and analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. Nine (9) of sixteen (16) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 7. All initial calibrations associated with this data set were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. To the best of my knowledge, this data report is in compliance with the terms and conditions of the purchase order, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hard copy data package and in the electronic data submitted on diskette has been authorized by the cognizant laboratory manager or his/her designee to be accurate as verified by the following signature.

lain Daniels
Laboratory Manager

Lionville Laboratory Incorporated

perly-\group\data\herb\\imi\09L-404.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

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BHI-EE-011 (03/01/2002)

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BHI-EE-011 (03/01/2002)

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	0	D	Ξ
PROJECT: As	o aru		DATA PACKA	GE: H 2329	
VALIDATOR:	nat	LAB: Thor	ville	DATE: //	8/03
CASE:			SDG: 4	2329	
		ANALYSES	PERFORMED		
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Comments:					
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Data Validation I	rocedure for Che	niral Analysis		· · · · · · · · · · · · · · · · · · ·	
October 2000	2 management of the Control				A-11

3. BLANKS (Levels B, C, D, and E)	_
Calibration blanks analyzed? (Levels D. E)	Yes No (N/A)
Calibration blank results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	X
Laboratory blank results acceptable?	
Field/trip blanks analyzed? (Levels C, D, E)	
Field/trip blank results acceptable? (Levels C, D. E)	. \
Tracscription/calculation errors? (Levels D, E)	
Comments:	
A ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	No NA
Surrogate/system monitoring compound recoveries acceptable?	
Surrogates traccable? (Lavels D, E)	
Surrogates expired? (Levels D, E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	\sim
Smadards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	
Transcription/colculation errors? (Levels D. E)	
Performance midit sample(s) analyzed?	
Performance audit sample results acceptable?	Yes No N/A
Comments: MS/MSD In spl # BIZHV8 is outail	of the state of th
Control limits for Hilapon december 2 45	That
2,4 DB Tucke to be bloosed with "US"	
TO RPD for BITHER is class out of contr	H Limit
Surrout recovery for 1217 48 9 is ret of	Can take
Sample neider to be flagger "US"	W AN -F-
Data Validation Procedure for Chemical Analysis	
October 2000	A 12

5. PRECISION (Levels C, D, and E)	
Duplicate RPD values acceptable?	Yes No N/A
Duplicate results acceptable?	Yes NA
MSMSD standards NIST traceable? (Levels D, E)	Yes No KIA
MS/MSD standards expired? (Levels D, E)	
Ficilé duplicate RPD values acceptable?	Yes No WA
Field split RPD values acceptable?	Yes No NA
Transcription/calculation errors? (Levels D, E)	
Comments see parte in section 4	
6. HOLDING TIMES (all levels)	
Samples moperly preserved?	YES NO N/A
그 그 이번 방법을 가면 하면 바다 하다 그리고 있다. 그는 그를 보고 있다.	Ycs No N/A
Comments Not all samples on CO-C received. 1/10	Upleration
However All that were marked for	
Testas were reported	

8.	COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS	(all leve	ts)
Resul	s reported for all requested analyses?	Yes)	No N/A
Racso	its supported in the raw data? (Levels D, E)	Ycs	No (NA)
Samp	es properly prepared? (Levels D, F)	Yes	No (NA)
Detec	tion limits meet RDL?	_(Fe)	No N/A
	cription/calculation errors? (Levels D, E)	-	And the second second

9.	SAMPLE CLEANUP (Levels D and E)		
Fluor	icil 🏵 (or other aborbant) cleanup performed?	Ycs	No (N/A)
	beck performed?		-
· .	k recoveries aceptable?		
	k materials naceable?		
	k materials Expired?		
	ytical batch QC given similar cleanup?		
	scription/Calculation Errors7		-3
	ments:		
50.			

October 2000

GENERAL ORGANIC ANALYSIS DATA VALIDATION CHECKLIST Conxnents: Data Validation Procedure for Chemical Analysis A-15

Date:

November 18, 2003

To:

Fluor Hanford Inc.

From:

EOM

Project:

PW-2/PW-4, 207-A Borehole

Subject:

Radiochemistry-Data Package No. H2329

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2329 prepared by Eberline Services. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	. Analysis
B17HX8	09/03/03	Soil	C	See note 1
B17HX9	09/03/03			
B17HY4	09/04/03	•		
B17J02	09/03/03			
B17HX4	09/03/03			
B17HX5	09/03/03			
B17HX6	09/04/03			
B17HR9	09/03/03			
B17HTO	09/03/03			
B17HT1	09/03/03			

¹⁻ Alpha spectroscopy (Th-232), Np-237, Tc-99, Sr-89, 90 (Total), C-14, I-129, Ni-63, H-3.

Data validation was conducted in accordance with BHI validation procedure, *Data Validation Procedure for Radiochemical Analysis*, October 2000, BHI-01433, Rev. 0 and the *Uranium-Rich/General Process Condensate and Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan*, DOE/RL-2000-60, Rev. 1. Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Data Requested by Client—none required, not apply

DATA QUALITY PARAMETERS

Holding Times

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

Preparation (Method) Blanks

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; samples results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field Blank

No field blanks were submitted for analysis.

Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 65-135%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30%, tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All LCS accuracy results were acceptable.

Due to the lack of a matrix spike analysis for C-14, and because no tracer or carrier was used on the C-14 analysis, all C-14 results were "J" flagged.

Due to a tracer recovery of 17% for sample B17HX6, the I-129 result for that sample have been "J" flagged.

Duplicates

Laboratory Duplicates

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If a duplicate sample was not analyzed, qualify all associated sample results as estimated (J, UJ). If the sample and duplicate concentration are both >5xRDL and the RPD is >20% for water samples (>35% for soil samples), qualify all associated sample and duplicate results as estimated (J). If both sample and duplicate results are non-detect, no qualification is required. If either or both of the sample and duplicate sample concentrations are <5xRDL, the above RPD criteria do not apply and the range of the sample and duplicate concentrations must be evaluated as follows:

- If the range in concentration between the sample result(s) or quantitation limit(s) are ≤RDL unit for water samples (≤2xRDL units for soil samples), no qualification is required.
- If the range in concentration between the sample result of quantitation limit are >RDL unit for water samples (>2xRDL units for soil samples), then qualify all associated sample results as estimated (J). Non-detects are not qualified.

All duplicate results are acceptable.

Field Duplicate

Sample B17J02 was a field duplicate of sample B17HX8. All field duplicate results are acceptable.

Detection Levels

The MDA exceeded the RDL for all I-129 sample results.

As per the data validation procedure, no qualifiers are required to be applied to the data.

Completeness

Data package No.H2329 was submitted for validation and verified for completeness. Completeness is based on the percentage of date determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

- Due to the lack of a matrix spike analysis for C-14, and because no tracer or carrier was used on the C-14 analysis, all C-14 results were "J" flagged.
- Due to a tracer recovery of 17% for sample B17HX6, the I-129 results for that sample have been "J" flagged.

REFERENCES

Data Validation Procedure for Radiochemical Analysis, October 2000, BHI-01433, Rev. 0

Uranium-Rich/General Process Condensate and Process Waste Group Operable Unit RI/FS Work Plan and RCRA TSD Unit Sampling Plan, DOE/RL-2000-60, Rev. 1.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimated, but the data are usable for decision-making purposes.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the date are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Summary of Data Qualification

DATA QUALIFICATION SUMMARY

SDG: H2329	REVIEWER: KAB	DATE: 11/18/03	PAGE 1 OF 1
COMMENTS:			
SAMPLES AFFECTED	QUALIFIER	COMPOUND	REASON
B17HX8	J	C-14	No matrix spike
B17HX9	J	C-14	No matrix spike
B17HY4	J	C-14	No matrix spike
B17J02	J	C-14	No matrix spike
B17HX4	J	C-14	No matrix spike
B17HX5	J	C-14	No matrix spike
B17HX6	J	I-129	Low Tracer Recovery
B17HR9	J	C-14 C-14	No matrix spike No matrix spike
B17HTO	J	C-14	No matrix spike
B17HT1	J	C-14	No matrix spike

Qualified Data Summary and Annotated Laboratory Reports

7580-001

DATA SHEET

B17HR9

	SDG	7580		Client/Case no	Hanford	BDG	H2329	
	Contact	Melipsa C.	Mannion	Contract	No. 530			
							1.00	- 1
Lab sar	mple id	R309032-01	_	Client sample id	B17HR9			
		7580-001		Location/Matrix	200-PW-4/Recentie	n Basin	SOLID	
- R	eceived	09/08/03	_	Collected/Weight	09/03/03 08:41	(01.0 q		: .
*	solids	92.0		Custody/SAF No	F03-006-242	03-006		

ANALISTE	CAS NO	RESULT pCi/g	20 BAR (COUNT)	MDA pci/g	RDL pci/g	QUALI- PIERS	TEST
Tritium	10028-17-8	0.385	0.17	0.27	400		Ħ
Carbon 14	14762-75-5	-1.06	2.2	3.8	50	でゴ	C
Nickel 63	13981-37-8	-0.379	1,4	2.3	30	Ū	NI_L
Total Strontium	SR-RAD	0.676	0.17	0.22	1.0		SR
Technetium 99	14133-76-7	0.123	D.18	0.44	15	ប	TC
Thorium 228	14274-82-9	0.535	0.26	0.24		-	TH
Thorium 230	14269-63-7	0.252	0.19	0.24	1.0		TH
Thorium 232	TH-232	0.535	0.25	0.24	1.0		TH
Neptunium 237	13994-20-2	Đ	0.019	0.044	1.0	U	NP
lodine 129	15046-84-1	-5.00	3.7	8.6	2.0	Ü	I

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7580-002

DATA SHEET

B17RT0

7580 Melisga C. Mannion	Client/Case no Contract	
	Client sample id Location/Matrix Collected/Weight Custody/SAF No	200-PW-4/Retention Hasin SOLID 09/03/03 08:57 108.3 q

ANALYTE	CAS NO	RESULT pCi/g	20 ERR (COUNT)	pci/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.82D	0.17	0.25	400		Н
Carbon 14	14762-75-5	-0.480	2.1	3.6	50	णउ	C
Nickel 63	13981-37-8	-0.667	1.4	2.3	30	υ	NI L
Total Strontium	SR-RAD	0.445	0.15	6.22	1.0	-	SR
Technetium 99	14133-76-7	0.093	0.19	0.58	15	O.	TC
Thorium 228	14274-82-9	0.479	0.26	0.24		_	TH
Thorium 230	14269-63-7	0.510	0.26	0.24	1.0		TH
Thorium 232	TH-232	0.702	0.32	0.24	1.0	*	TH
Neptunium 237	13994-20-2	0.005	0.039	0.070	1.0	Ū	NP
Todine 139	15045-84-1	-0.290	1.6	3.6	2.0	Ū	I

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7580-003

DATA SHEET

B17RT1

7	7580 Meliasa C. Mannion	Client/Case no Contract		
Lab sample id	R309032-03	Client sample id	B17871	
Dept sample id	7580-003	Location/Matrix	200-PW-4/Retention Basin SOLID	
Received	09/08/03	Collected/Weight	09/03/03 13:50 83.3 g	
* solids	98.8	Custody/SAF No	F03-006-242 F03-006	

ahalyte	CAS NO	RESULT pci/g	20 ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TROT
Tricium	10028-17-8	0.015	0.15	0.26	400	ប	H
Carbon 14	14762-75-5	-0.627	1.5	2.5	50	ंच 👽	C
Nickel 63	13981-37-8	-0.540	1.3	2.3	- 30	Ū	NI L
Total Strontium	SR-RAD	0.046	0.13	0.25	1.0	ับ	38
Technetium 99	14133-76-7	0.095	0.16	0.56	15	σ	TC
Thorium 228	14274-82-9	0.120	0.12	0.23		υ	TH
Thorium 230	14269-63-7	0.360	0.24	0.23	1.0		TH
Thorium 232	TH-232	0.180	0.13	0.23	1.0	υ	TH
Neptunium 237	13994-20-2	-0.026	0.021	0.059	1.0	TO .	NP
Todine 129	15045-84-1	-1.68	2.9	6.7	2.0	: σ	I

200-PW-2/200-PW-4 CU-Borehole Soil

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7580-004

DATA SHEET

B17HX4

	7580	Client/Case no	Hanford SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R309032-04	Client sample id	B17HX4
Dept sample id	7580-004		200-PW-4/Retention Basin SOLID
Received	09/08/03	Collected/Weight	09/03/03 09:20 119.0 g
₹ solids	91.4	Custody/SAF No	

ANALYTE	CAS NO	result pc1/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TROT
Tritium	10028-17-8	6.24	0.30	0.26	400	1	Ħ
Carbon 14	14762-75-5	.0.272	2.1	3.6	50	vJ	c
Nickel 63	13981-37-8	-0.966	1.4	2.5	-30	U	NI L
Total Strontium	SR-RAD	1.40	0.23	0.23	1.0	1	SR
Technetium 99	14133-76-7	0.050	0.17	9.56	15	Ū	TC
Thorium 228	14274-82-9	0.344	0.21	0.26		•	TH
Thorium 230	14269-63-7	0.447	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.723	0.35	0.26	1.0	dia di	TH
Neptunium 237	13994-20-2	-0.020	0.029	0.071	1.0	י ט	NP
Iodine 129	15046-84-1	-2.77	2.2	_5,1_	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

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7580-005

DATA SHEET

B17EXS

	7580 Melissa C. Mannion	Client/Case no Contract		SDG H2329
sample id	7580-005 09/08/03	Client sample id Location/Matrix Collected/Weight Custody/SAF No	200-PW-4/Retention F 09/03/03 09:30 107	<u>8 q</u>

ANALYTE	CAS NO	pci/g	20 ERR (COUNT)	MDA pci/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	12.4	0.39	0.25	400	!	Н
Carbon 14	14762-75-5	-0.214	2.0	3.4	50	ซซ	C
Nickel 53	13981-37-8	+0.817	1.4	2.3	30	tr	NI L
Total Strontium	SR-RAD	1.34	0.22	0.21	1.0		SR
Technetium 99	14133-76-7	Đ	0.21	0.60	15	σ.	TC
Thorium 228	14274-82-9	0.705	0.48	0.45	-		TH
Thorium 230	14269-53-7	0.528	0.36	0.45	1.0		TH
Thorium 232	TH-232	0.528	0.36	0.45	1.0	1 .	TH
Neptunium 237	13994-20-2	0.074	0.074	0.11	1.0	U	NP
Tedine 129	15046-84-1	-3.74	5.1	12	2.0	ซ	Ì

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7580-006

DATA SHEET

B17HX6

S	G 7580	Client/Case no	Hanford	SDG H2329
Conta	t Melissa C. Mannion	Contract	No. 630	
Lab sample .	d R309032-06	Client sample id	B17EX6	
Dept sample :	d 7580-006	Location/Matrix	200-PN-4/Retentio	
the state of the s	d 09/08/03		09/04/03 10:25 1	
k solid	ls <u>96.0</u>	Custody/SAF No	P03-006-243	<u>03-006</u>

ANALTTE	CAS NO	RESULT pci/g	20 BRR (COUNT)	MDA pci/g	RDL pCi/g	QUALI- PIERS	TEST
Trítium	10028-17-8	5.68	0.28	0.25	400		H
Carbon 14	14762-75-5	0.144	1.5	2.5	50	U 🖫	C
Nickel 63	13981-37-8	-1.92	1.3	2.3	30	U	NIL
Total Strontium	SR-RAD	0.007	0.13	0.27	1.0	U	er.
Technetium 99	14133-76-7	0.024	0.21	0,56	15	Ū	TC
Thorium 228	14274-82-9	0.332	0.24	0.23	•		TH
Thorium 230	14269-63-7	0.512	0.24	0.23	1.0		TH
Thorium 232	TH-232	0.331	0.18	0.23	1.0		TH
Neptunium 237	13994-20-2	-0.037	0.075	0.29	1.0	U	NP
Iodine 129	15045-84-1	0.470	2.0	4.6	2.0	でゴ	I

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7580-007

DATA SHEET

B17HX8

	SDG	7580		Client/Case no	Kanford		SDG #2329
	Contact	Melissa C. Ma	unnion_	Contract			
	sample id	R309032-07	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Client sample id			
nebr		09/08/03		Location/Matrix	260-PW-4	/Retention B	Bein SOLID
		95.4		Collected/Weight Custody/SAF No	703-006-	245 F03-	1,000

ANALYTE	CAS NO	RESULT pci/g	2 o EDR (COURT)	SCT/A SEDY	RDL pci/g	QUALI- FIERS	Trat
Tritium	10028-17-8	0.295	0.16	0.25	400		H
Carbon 14	14762-75-5	1.22	2.3	3.7	50	v J	c
Nickel 63	13981-37-8	-0.805	1.4	2.4	30	T T	NIL
Total Strontium	SR-RAD	1.22	0.21	0.22	1.0	·	SR
Technetium 99	14133-76-7	0.049	0.18	0.57	15	U	TC
Thorium 228	14274-82-9	0.714	0.29	0.22			TH
Thorium 230	14259-63-7	1.25	0.41	0.22	1.0		TH
Thorium 232	TH-232	0.514	0.23	0.22	1.0	i i	TH
Neptunium 237	13994-20-2	-0.012	0.025	0.076	1.0	ប	NP
Iodine 129	15046-84-1	-0.998	3,4	7.8	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

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7580-010

DATA SHEET

B17J02

•	7580 Melispa C. Mannion	Client/Case no Contract		5DG_H2329
Lab sample id Dept sample id Received 1 solids	7580-010 09/08/03	Client sample id Location/Matrix Collected/Weight Custody/SAF No	200-PW-4/Retention F 09/03/03 10:00 78.	<u>6 q</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ BRR (COUNT)	MDA pCi/g	bcr/d	QUALI- Piers	TROT
Tritium	10028-17-8	0.205	0.15	0.25	400	מ	Ħ
Carbon 14	14762-75-5	-0.23B	2.2	3.7	50	g 😈	Ċ
Nickel 63	13901-37-8	-1.05	1.5	2.5	30	i D	NI L
Total Strontium	SR-RAD	0.969	0.19	0.21	1.0		SR
Technetium 99	14133-76-7	0.101	0.19	0.58	15	ប	TC
Thorium 228	14274-82-9	0.410	0.28	0.26			TH
Thorium 230	14269-63-7	0.511	0.28	0.26	1.0		TH
Thorium 232	TH-232	0.580	0.28	0.26	1.0		TH
Neptunium 237	13994-20-2	-0.005	0.021	0.058	1.0	ı n	NP
Iodine 129	15046-84-1	-0.850	1.3	3.0	2.0	מ	I

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7580-008

DATA SHEET

B17RX9

S DG	7580	Client/Case no	Hanford	SDG H2329
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R309032-08	Client sample id	B17HX9	
Dept sample id Received		Location/Matrix Collected/Weight	200-PW-4/Retention P 09/03/03 10:30 68.	· · · · · · · · · · · · · · · · · · ·
t solids		Custody/SAF No	F03-006-245 F03-	

ANALYTE	CAS NO	result pci/g	20 BRR (COUNT)	MDA pci/g	RDL pCi/g	QUALI- FIERS	TRET
Tritium	10028-17-8	0.156	0.15	0.25	400	U	Ħ
Carbon 14	14762-75-5	-0.296	2.1	3.6	50	ヮゴ	C.
Nickel 63	13981-37-8	-0.758	1.6	2.8	30	<u>י</u>	NI L
Total Strontium	SR-RAD	1.18	0.21	0.21	1.0		SR
Technetium 99	14133-76-7	0.093	0.17	0.54	15	U	TC
Thorium 328	14274-82-9	0.681	0.31	0.24			TH
Thorium 230	14269-63-7	0.773	0.31	0.24	1.0		TH
Thorium 232	TH-232	0.371	0.19	0.24	1.0		TH
Neptunium 237	13994-20-2	-0.016	0.021	0.045	1.0	ซ	NP
Todine 129	15046-84-1	0.513	1.0	2.4	2.0	Ü	I

200-PW-2/200-PW-4 OU-Borehole Scil

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Lab id ERRINE
Protocol Hanford
Version Ver 1.0
Porm DVD-DS
Version 3.06
Report date 10/22/03

7580-009

DATA SHEET

B17HY4

		7580 Melissa C. Mannion	Client/Case no Contract	
Dept sa	mple id eceived	R309D32-09 7580-009 D9/08/03 94.8		200-PW-4/Retention Basin SOLID 09/04/03 12:40 117.6 g

YMYTALS	CAS NO	RESULT pci/g	26 BRR (COUNT)	MDA pci/g	RDL pCi/g	quali- Piers	TEST
Tricium	10028-17-8	16.6	0.44	0.26	400		Н
Carbon 14	14762-75-5	0.746	2.1	3.5	50	ッコ	C
Nickel 63	13981-37-8	-0.407	1.5	2.5	30	U	NI L
Total Strontium	SR-RAD	0.067	0.14	0.26	1.0	U	SR
Technetium 99	14133-76-7	0.124	0.20	0.61	15	U ·	TC
Thorium 228	14274-82-9	0.491	0.25	0.23			TH
Thorium 230	14269-63-7	0.429	0.25	0.23	1.0		TH
Thorium 232	TH-332	0.521	0.25	0.23	1.0		TH
Neptunium 237	13994-20-2	0.043	0.043	0.059	1.0	U	NP
Iodine 129	15046-84-1	-3.60	4.6	_11	2.0	U	I

200-PW-2/200-PW-4 OU-Borehole Soil

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Protocol Hanford
Version Ver 1.0
Porm DVD-DS
Version 3.06
Report date 10/22/03

Laboratory Narrative and Chain-of-Custody Documentation

Page 1 of 2

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2329 was composed of eleven soil samples designated under SAF No. F03-006 with a Project Designation of: 200-PW-2/200-PW-4 OU – Borehole Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 lodine-129 Analyses

Sample B17HX6 had a yield of 17% (Lower Limit 20%). No other problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

Page 2 of 2

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.12 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager of a designee, as verified by the following signature."

M	elen	mom			10/22/3	
	C. Mar			D	ate	
Progra	m Mana	ner	1.5			 - 1

FH-Central P	lateau Project	C	HAIN OF CUST	rody/s	AMPLI	E ANAL	YSIS	RE	QUEST	r	F0.	3-006-245	Page 1	of 1
Collector Popc/Pfister/Hughes			any Contact Huistrom	Telepho 373-3	928				jeet Coordi NT, SI	nator	Price Code	8N		urnaround
Project Designation 200-PW-2/200-PW-4 C	OU - Barchole Soil Sampling		ling Lucation -PW-4/Retention Basin	-C4115 F	12329	(7580)			7 No. -006		Air Quality	, П	45	Days
Ice Chest No.	EEOFR		Logbook No. F-N-3361		COA 117504E	10			hod of Ship ederal Expre					
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POSSIBLE SAMPLE I			Preservation	Cool4C	Cool 4C	Cool 4C	Cool	IC	COOLAC	None				
lle k	B17 Joo		Type of Container	aG	яG	aG	aG		<i>J</i> 6	aG	aG			
Special Handling and	l/or Storage		No. of Container(s)	1	1		1		/1	1	1			
N/A			Volume	ó0mL	250m¥.	125mL	3	1	125mL	60mL	60mL			
	SAMPLE ANAI	LYSIS	kin menenjenang sarahan menenjenangan	Pesticides - 8081	Chioro- Heriscides - EPA\$151	Chromium Flex - 7196	353.2		Oil & Greats - 413.1	Special Special Instructio				
Sample No.	Matrix *	Sample Date	Sample Time						N. C. MAR					
B17HX8	SOIL	9-3-0	3 1000		/		and the second			×	×			
B17HX9	SOIL	9-1-0	1020							×	×		·	
B17HY4	SOIL	9-4-0	3 1/240			٠.				×	×			
\$17HY5	soji.sty:MJ	9-4-03		_/_										
199 THOS BITO		9-3-03	1000		-					×				
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100000000000000000000000000000000000000	tt 9-4-0340C			943	129;1	echnolium-99; S Nickel-63; Nept	Strontium-23 unium-23	89,90 7	- Total Sr, Is	otopic The	rium (Thorium-2	32); Carbon-14;	lodine-	Sir-Shatge W = Walez O=Oil
TANTARENT	MWars 9-4-33	Receive By Tro		3 1430	Per	sonnel not av	allable	to	inne					A*Air DS*Drum Solids DI.*Drem Liquids
Relinquished By/Removed Fra	Date/l'une	Received By/Stor	ed In Da	destine Lak	Ref	nquish samp # <u>SC</u> on	2/1	10	234	>		•		Y-Tissue Wi-Wips
3c- 95.03	3768 1000 m EAC Date/Time 100	Received Dy/Sto	of Figure 2	4-5 w	3				The same of the sa					Let.iquid VerVigitation Xe-Other
15 4000 JZ	A blann 9. 510	3	Ex				1		<i>:</i>					A-Case
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LABORATORY Recei				Titl				: 1				Dat	:/limo	
FINAL SAMPLE Dispo	sal Mothod		**************************************			Dispos	ed By					Da	c/lime	
NUTE BUT ASSESSED					**********			-				THE RESERVE OF THE PERSON NAMED IN COLUMN 1		

FH-Central Plat	eau Project	C	HAIN OF CUST	rody/s	AMPLI	S ANAL	YSIS			F(3-006-243	Page 1	of 1
Collector Pope/Pfister/Hughes			any Contact Hulstrom	Telephor				Project Coo	rdinator	Price Code	8N	Data T	urparound
Project Designation 200-PW-2/200-PW-4 OU -	Borchole Soil Sampling	Samp 200	ling Location -PW-4/Retention Basin -	C4114 /	2329	(7580	·)	SAF No. F03-006		Air Qualit	y 🗆	45	Days
lee Chest No.	EF OSFE		Logbook No. I-N-1361		COA 117504ES	10		Method of S Federal Ex					
Shipped To EHERLINE SERVICES (F	ormerly TMA)	Offsit	e Property No.	A03	3 35	7		Bill of Ladh	ig/Air Bill	No.	SEE O	×/	
POSSIBLE SAMPLE HAZ			Preservation	Cool 4C	Cool 4C	Cool #C	Coof 4	ic coolic	None	None			
			Type of Container	4 G	»O	aG	#6	/ 60	аG	aG			
Special Handling and/or			No. of Container(s)	i	1	1	12	/ 1	1	1			
N.)		Volume	60mL	250mL	125mL		. 125mL	60ini.	60mil			1
	SAMPLE ANAL	.YSIS	Kening and a second	Pesificides - gowr	Chloro- Herbicsles - EPA8151	Chromium Hay (1918)	NO2/NO 353 2	33- CNI & Great 413-1	e - See item (i Special Instructio	1			
Sample No.	Matrix *	Sample Date	Sample Time					A CONTRACT				Marks (S)	
B17HX4	SOIL	9-3-03	6920		/				X	X			
B17HX5	SOIL	9.3.0	3 0980				1			X			
B17HX6	SOIL	9-4-0	3 1035		7				×	•	1		
B17HX7	90IF			HY90	9-4	-03			>	 	-		
B17J02	- SOIE			TMI	. न-प	.03			$1\rightarrow$	十天			
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SECTION	Method					Dispos				· .		Date/Time	

Collector													
Pope/Pfister/Hughes			Company Contact I.C Hulstrom	Telephane No. 373-3928	. Zo.		Proje	Project Coordinator TRENT, SJ		Price Code	N8	Data Tu	Data Turnaround
Project Designation 200-PW-2/200-PW-4 OU - Borchole Soil Sampling	Borehole Soil Sampling	Sampli 200	Sampling Location 200-PW-4/Retention Basin	-(4113	H2329	d (15kb)) SAF No. P03-006	4e. 96	Alb	Air Quality		45	45 Days
De Chest'No.	SEE OSPR	Meta 1	Rická Lagbook No. HNP-N-3361		COA 117504ES10		Meth	Method of Shipment Federal Express	icat .				
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Special Handling and/or Storage	Storage		Type of Container	2	2	ä	<u>ک</u>	Sa .	2	5 2			
NIA		- 1	No. of Container(8)				\[\frac{1}{2}\]	-		=			
			Volume	Somi	250mL) (0)		125mL.	60raf.	60mL			
	SAMPLE ANALYSIS	8		Pedicides 80a 1	Caloro- florbiabea EPAB151		151.1 151.1	Ol & Gresse - 86	See item (1) in Special Instructions.	Tritiun - H3			
Sample No.	Matrix *	Sample Date	Sample Time										
B17HR9	SOIL	9-3-03	180				-		×	X			
вижнто	lios -	9-3-63	1,080	1					×	X			
BIZHTI	SOIL	9-7-03	15,50			÷ i			X	×			
Birit	IIOS	9-5-03	mater a so				+		×	X			,
MATERIAL DATE PROGRESSION		3.17.00											
Think The Properties Barring	MEN BANGING IGN	Received By/Stored L	ATT.	9-3-03-1500	FIT acknowled characteristics	SPECTAL INSTRUCTIONS IN acknowledges that holding times (less that 14 days) may not be met by the lab due to the radichardensities.	THONS Iding times (i	ess than 14 da	ys) may not b	e net by the k	sh due to the rai		Metrix *
M -0 X 0 10 #	43434 1100			13.48V	(1) Teel (29) Nic	(1) Technotium-99; Stroatium-89,90 Total Sr. Isotopic Thorium (Thorium-232); Curbon-14; Iodine- (19), Nickel-63; Neptanium-237	atium:89,90 m-237	Total Sr. Isot	opic Therium	(Thorium-233	1; Carbon-14;		SP-Sings W-Water
WYDWESTAND	2 逐	Received Bu/Stored		9-4-03/4		Personnel not available to	able to					<u> </u>	A-Air DS-Deam Solide DE-Deam Liquida
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5	- Pate Time	Recuired By/Stored	" (h 9	Date Time - 183	-								in the second
CABORATORY Received By SECTION	у			Title							Date	Date/Tirac	
FINAL SAMPLE Disposal Method DISPOSITION	Action					Disposed By	A				Date	Date/Time	
					:		•						

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	<u> </u>	D	E	
PROJECT, 20	1-A-Basin.	PW-4 Boreho	DATA PACKAG	E 42329		
VALIDATOR: K	デート カガタイド トー・・・・・・・ 17.00 to 1. ■ 1.	LAB: Ebcy	,	DATE: 19	03	
Case:			SDG: M23	39		
		ANALYSES	PERFORMED			
Gross Alpharillota	(Streeter 3) 4.4	(Todanius 39)	(Apia Spicoroscopy)	George Spectroscopy		
Total (Freeign)	Refrem 22		C-14	N-63	I-129	
SAMPLES/MATI	RIX, (B) 17 HY	8. HITHY	IJBITHYL	1. 417.30	BITHXY	
	KH MA ²	5. KITHY	BITHRA	RITHTO	MULTI	
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Completenes	Š	*****************	BYKŠŠpog POSŠŠboŠPERJES LUGG.	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$		
		9¢nt7	*********************	, 02 TTŽJ \$KŠAJ, 146 ZD2, 4A7ZD2, 233	Yes NO NA	y .
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					· · · · · · · · · · · · · · · · · · ·	
Initial Calibra	ation (Levels D,	E)	*************************************	######################################	XN/A	
struments/dete	ectors calibrated) 	->4@pubgZ9@\$4Vbpq~p\$q5d\$#4	, - 54 47548 X2 50457486 <u>4</u> 56748 4	Yes No NA)
1 1			žá kálokovy kawa pozion na nagy magan		· · · · · · · · · · · · · · · · · · ·	
	_		2820748474747444484848848			5
ata Validation Proceeds	ocedure for Radioc	hemical Analysis		· · · · · · · · · · · · · · · · · · ·	A-1	•

Appendix A - Radiochemical Data Validation Checklist

Standards Expired?Yes	No(N/A)
Calculation check acceptable?Yes	No N/A
Comments:	
	-
3. Continuing Calibration (Levels D, E)	
Calibration checked within required frequency?	
Calibration check acceptable?Yes	No N/A
Calibration check standards traceable?Yes	
Calibration check standards expired?	No (VA)
Calculation check acceptable?Yes	No NA
Comments:	
4. Background Counts (Levels D, E)	N/A
Danksmand County should district an extend for the said	. 600
Background Counts checked within required frequency?Yes	: ><
Background Counts acceptable?Yes	
Calculation check acceptable?	No (N/A
Comments:	
	i ·
	- I
Data Validation Procedure for Radiochemical Analysis October 2000	A-2
	A=/

	and the second second
5. Blanks (Levels B, C, D, E)	П N/A
Method blank analyzed within required frequency?	Yes No N/A
Method blank results acceptable?	
Analytes detected in method blank?	
Field blank(s) analyzed?	
Pield blank results acceptable?	
Analytes detected in field blank(s)?	
Transcription/Calculation Errors? (Levels D, E)	Yes No (N/A
Comments:	
EU-152, Eu-154 and Eu-155 and Also Ra- 226+ Ra-228 Souple Bl	93W6 MM
LCS/BSS recoveries acceptable? LCS/BSS traceable? (Levels D,E) LCS/BSS expired? (Levels D,E) LCS/BSS levels correct? (Levels D,E)	Yes No NA Yes No NA Yes No NA
Transcription/Calculation Errors? (Levels D, E)	Yes No (N/A)
Comments:	
7. Chemical Carrier Recovery (Levels C, D, E)	DNA
Chemical carrier added?	Yes No N/A
Citernical recovery acceptable?	Yes No N/A
Chemical carrier traceable? (Levels D, E)	Vas No.N/A
	errors reconstruction accounted y mix yand out the
Data Validation Procedure for Radiochemical Analysis	

A-4

Chemical carrier expired? (Levels D, E)	Yes No NA
Transcription/Calculation errors? (Levels D, E)	Yes No NA
Comments:	
	· · · · · · · · · · · · · · · · · · ·
8. Tracer Recovery (Levels C, D, E)	
Tracer added?	WENNA NIA
Tracer recovery acceptable?	Voe Nr. N/A
Tracer traceable? (Levels D, E)	Van Mr. NYA
Tracer expired? (Levels D, E)	Ven Na NA
Transcription/Calculation errors? (Levels D, E)	
Comments: I-129 For sample BITHY6 had a to	THE CONTROLLED
J' flag results	awc root pro
9. Matrix Spikes (Levels C, D, E)	
Matrix spike analyzed?	
Spike recoveries acceptable?	YES NO NA
Spike 1000 valies societismos incluing to the	Yes No NA
Spike source traceable? (Levels D, E)	
Spike source expired? Levels D, E)	
Transcription/Calculation Errors? (Levels D, E)	
160	tracon
OUT CONTINU 1566, "I" C-14 results	
	

October 2000

October 2000

13. Results and Detection Limits (All Levels)	D N/A
Results reported for all required sample analyses?	Yes No N/A
Results supported in raw data?(Levels D, E)	
Results Acceptable? (Levels D, E)	
Transcription/Calculation errors? (Levels D, E)	
MDA's meet required detection limits?	
Transcription/calculation errors? (Levels D, E)	
Comments: I-129 For all sample, the M	PARKCRECT HERRE
Forsample B173Wp, Co-60, Co-1521	154 +155 the MOA
exceeded the ROI	

Date:

To:

From:

Project:

Subject:

12/12/03
Fluor Hanford
EQM, Inc.
200 Area Source Characterization 200-PW-2 & 4 Operable Unit
Canaral Chemistry Analysis, Method -Data Package SDG H2329

INTRODUCTION

This memo presents the results of Data Validation on Data Package SDG H2329 prepared by Lionville Laboratory, Inc. (LLI) for General Chemistry analysis. A list of samples validated along with the analysis reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
B17HR9	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HT0	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HT1	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HX4	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HX5	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HX6	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HX8	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HX9	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17HY4	9/4/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃
B17J02	9/3/03	Soil	С	Percent solids, CR ⁺⁶ , O&G, NO ₂ NO ₃

Data validation was conducted in accordance with the BHI Validation Procedure for Chemical Analysis, BHI-01435, and Sampling and Analysis Plan, DOE/RL-2000-60, Rev. 1. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualifiers

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain of Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by the Client – not apply

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times for oil and grease is 28 days, percent solids is not established, chromium VI is 28 days, and NO₂NO₃ by 353.2 method is 28 days.

All holding times were met.

Method Blanks

At least one method blank per analytical batch of samples was analyzed. It consisted of deionized distilled water and was processed through each set of the sample preparation and analysis procedures.

All method blanks fell within acceptable limits.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix spike analyses were used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spikes must be analyzed at least one per analytical batch and must be taken through the same procedures and added as early in the sample preparation process as possible. Matrix spike recoveries must fall within the range of 75 to 125% which are the laboratory requirements dictated by the Sampling and Analysis Plan (SAP). If the sample concentration exceeds the spike concentration by a factor of 4 or more, no qualification is required.

Matrix spikes were analyzed where applicable with acceptable results.

Laboratory Control Sample (LCS) or Blank Spike Sample (BBS)

LCSs /BSS are also used to measure accuracy. They are analyzed at a frequency of one per analytical batch. The acceptable limits for the LCS/ BSS are 80-120%

All LCS/BSS met the acceptance criteria.

Precision

Duplicate Samples

Laboratory duplicate samples are used to measure laboratory precision and sample homogeneity. They were analyzed at a frequency of one per batch. Duplicate samples were prepared at the same time, using the same procedures as their associated samples. Results must be within a relative percent difference (RPD) of $\leq 20\%$ for non-aqueous samples that have a concentration of >5 times the RDL per the laboratory criteria dictated by the SAP.

All duplicate results met these criteria.

Field Duplicate Samples

Sample B17J02 was a duplicate of sample B17HX8. All sample-to-sample RPDs met acceptance criteria.

Analytical Detection Limits

Reported analytical detection limits were compared against the requirements of the Sampling & Analysis Plan, DOE/RL-2000-60, Rev. 1.

All required detection limits were met except for oil and grease. The O&G detection limits ranged from 695 to 748 mg/kg and all the samples were non-detects. The SAP required 200 mg/kg for low level samples and NA for high-activity soils. Results are well below the preliminary action limit of 2000 mg/kg. Method blank reporting limits were 667 mg/kg. No flags were applied as the preliminary action limit of 2000 mg/kg is well above the reporting limit. Nitrate/nitrite limits were commensurate with those limits in the SAP for ion chromatography methods, thus no flags were added.

Completeness

The data package for SDG: H2329 was submitted for validation and verified for completeness. Completeness was based on the number of data determined to be valid.

The completeness percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

BHI 01435. Rev 1, Validation Procedure for Chemical Analysis

DOE-RL2000-60, Rev. 1, Uranium-Rich/General Process Condensate and Process Waste Group Operable Units RI/FS Work Plan and RCRA TSD Unit Sample Pan-Includes 200-PW-2 and 200-PW-4 Operable Units.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI-01435 and DOE/RL-2000-60.

U - Indicates the compound or analysis was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for decision making purposes.

J – Indicates the compound or analyte was analyzed and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data was usable for the decision making purposes.

BJ – Applied to inorganic analyses only. Indicates that the analyte concentration is Greater than the IDL but less than the CRDL and is considered an estimate.

R – Indicates the compound or analyte was analyzed for, detected and due to identified major QC deficiency, the data are unusable.

UR – Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to a major QC deficiency.

NJ – Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e. usable for decision making purposes).

N – Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e. usable for decision making purposes).

Summary of Data Qualification

No data was qualified.

Qualified Data Summary and Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/26/03

CLIENE: TNUMANPORD F03-006 H2329 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0309L404

SAMPL8	SITE ID	ANALYTE	resul/t	UNITS	REPORTING LIMIT	DILUTION FACTOR
***	****	李孝宗 网络林克斯曼美国西美国美国共和国的	***	*****	建美国基本宣传等等	*******
-001	B17HR9	∜ Solids	92.4		0.01	1.0
		Chromium VI	0.43 1	MG/KG	0.43	1.0
		Nitrate Nitrite	1.0	MG/KG	0.22	1.0
		Oil & Grease Gravinetri	722 u	MG/KG	722	1.0
-002	B17HTC	* Solids	91.7	8	0.01	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
	y he iz de la discription	Nitrate Nitrite	5.1	MG/KG	0.23	1.0
		Oil & Grease Gravimetri	727 · u	MG/KG	727	1.0
-003	B17HT1	* Solids	96.1	*	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Nitrate Nitrite	1.1	MG/KG	0.20	1.0
		Cil & Grease Gravimetri	. 694 u	MG/KG	694	1.0
-004	B17HX4	* Solids	91.9	*	0.01	1.0
		Chromium VI	0.44 11	MG/KG	0.44	1.0
		Nitrate Nitrite	8.9	MG/KG	0.21	1.0
		Oil & Grease Gravimetri	725 u	mg/kg	725	1.0
-00s	B17HX5	% Solids	92.2	*	0.01	1.0
		Chromium VI	C.43 u	MG/KG	0.43	1.0
		Nitrate Nitrite	20.9	MG/KG	3.0	5.0
		Oil & Grease Gravisetri	723 u	MG/KG	723	1.0

Lionville Laboratory, Inc

INORGANICS DATA SUMMARY REPORT 09/26/03

CLIENT: TNUHANFORD P03-006 H2329 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 03091404

Sample	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B17HX6	% Solids	95.9		0.01	1.0
	: [일호 대항 등 등 말라 다 다고	Chromium VI	0.42 u	MG/KG	0.42	1.0
		Nitrate Nitrite	4.5	MG/KG	0.18	1.0
		Oil & Grease Gravimetri	695 u	MG/KG	695	1.0
-007	B17HX8	* Solide	89.7	3	0.01	1.0
		Chromium VI	0.45 u	MG/KG	0.45	1.0
		Nitrate Nitrite	1.6	MG/KG	0.24	1.0
		Oil & Grease Gravimetri	743 u	MG/KG	743	1.0
~008	B17HX9	% Solids	89.1		0.01	1.0
	NS BLARAS	Chromium VI	0.45 u		0.45	1.0
		Nitrate Nitrite	0.92	MG/KG	√3,24	1.0
		Oil & Grease Gravimetri.		ис/кс	748	1.0
-009	B17H74	% Solide	94.7	*	6.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
	[12] 도시아 (12] SER (12] (12]	Nitrate Nitrite	13.2	MG/KG	0.44	2.0
		Oil & Grease Gravimetri	704 u	MG/KG	704	1.0
-010	B17J02	% Bolids	91.0	*	0.01	1.0
	토 교육을 해 됐다면 함께 하고 그렇게 함께 되었다. 리카 이 아들리 사고 유명한 기계를 받는다.	Chronium VI	0.44 u	MG/KG	0.44	1.0
	가 나의 아래의 경험을 살다.	Nitrate Nitrite	1.3	MG/KG	0.21	1.0
		Oil & Grease Gravimetri		MG/KG	733	1.0
			化二氯化二氯化二氯			

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD F03-006 H2329

W.O.#: 11343-601-001-9999-00

LVL#: 0309L404

Date Received: 09-06-03

INORGANIC NARRATIVE

- 1. This narrative covers the analyses of 10 soil samples.
- 2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.
- 3. Sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. The method blanks were within the method criteria.
- 6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
- 7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite and Oil and Grease were within the 75-125% control limits.
- 8. The replicate analyses for Percent Solids, Chromium VI, Nitrate Nitrite and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

njp\i09- 404

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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Liquids - EP/TCLP	DOH	BITHX	4							080			X	X					<u> </u>	X	X	X	ļ	<u> </u>	
Leachate I - Wipe	005	BITHY	5						4	0930	<u> </u>			1						X	X	X	<u> </u>		<u> </u>
- Other - Fish	006	BI7H	X6		-14				9.4.03	1025	_									X	X	X.			
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FH-Central I	Plateau Project	CI	HAIN OF CUST	ODY/SA	AMPLE	ANALY	YSIS	REQUES	T	F03	-006-242	Page 1	01 <u>1</u>
Collector Pope/Pfister/Hughes		Compa	nny Contact Hulstrom	Telephon 373-39	e No.			Project Coord TRENT, SJ	ingtor	Price Code	8N		rnaround
Project Designation 200-PW-2/200-PW-4	OU - Borehole Soil Sampling		ing Location -PW-4/Retention Basin	- C4113	3			SAF No. F03-006	4	Air Quality		45.	Days
Ice Chest No.	RECRA		Logbook No. F-N-3361		COA 117504ES	10		Method of Shi Federal Exp			· · · · · · · · · · · · · · · · · · ·		
Shipped To EBERLINE SERVIC	ES (Formerly TMA)	Offsite	Property No.	A030	2 34	F.C.		Bill of Lading	/Air Bill N	o. <u>⊊</u>	-1-10	٥٥١٣	_
	HAZARDS/REMARKS							.			,		
N/A J	ic To Joo B	17100	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	4C Cool 4C	None	None	1. 1		
Special Handling ar	nd/or Storage		Type of Container	aG	aG	aG	aG	aG	aG	aG/			
N/A	C00 14°C		No. of Container(s)		1	1	1	ı	1	19			
			Volume	60mL	250mL	125mL	60m	L 125mL	60mL) SomL			
				Pesticides - 8081	Chloro- Herbickdes -	Chromium Hex - 7196	NO2/N 353.		Special	ritium - H3			
	SAMPLE ANAI	YSIS			EPA8151			·	Instruction	s. /	1		
			•						0	7			
Sample No.	Matrix *	Sample Date	Sample Time		0.000							126 TE 100 TE 1	
B17HR9	SOIL	9-3-0	3 0841	X	V	X	X	V	1		i stratica de la compa	in the way	
B17HT0	SOIL		3 1867	,	3-03	×	>	< ×	1/			 	
B17HT1	SOIL	9-3-0	3 1350	7/10		×	7		1/				
B17HT2	SOIL	9-3-6	3 mg-4	(3)		X	\rightarrow	\leftarrow	7				
CHAIN OF POSS	ESSION	Sign/Print	Names			IAL INSTR							Matrix *
	1800-9-3 of 1500	Received By/Store	ell# 193	-03 <i> 5</i> 00) chara	cteristics.		times (less than			•		S=Soil SE=Sediment SO=Solid
Relinguished By/Remayed Fr	#1 4.4.35 WM	Received By/Stor	then broada	horime 9-41	13 (1) T	echnetium-99; S Nickel-63; Nept		1-89,90 — Total Sr; 37	Isotopic The	orium {Thorium-2	232}; Carbon-1	4; Iodine-	Sir-Studge W = Water O=Oil
Relinguished By/Begroyed F	PAYONO Date Time - B4	Received By/Store	Harry 9-4-	te/Time 0.3 143	٥								A=Air DS=Drum Solids DL=Drum Liquids
Relinquished By/Removed Fr	rom Date/Time	o Received By/Store			Perso	nnel not ava Juish sample:	ilable t	0 the 3728					T=Tissuc WI=Wipe L=Liquid
Relinquished By/Remayed Fr		 Received By/Store 	d In Da	fe/Time	æ Kei#	<u></u>	±/_≥	<u> </u>					V*Vegetation X=Other
Relinquished Dy/Removed En		Received By/Store	dyln Da	te/Time		. * *				·			
	1 9.6 (13 // 025 eived By	$\frac{1}{2}$	Much 9.6	Title	; ;						D	ate/Time	
	posal Method					Dispos	ed By				D	Pate/Time	

FH-Central Plat	FH-Central Plateau Project CHAIN OF CUSTODY/S						YSIS	REQUEST	ľ <u></u>	rvə	-VVV-47-	1	
Collector Pope/Pfister/Hughes			any Contact Hulstrom	Telepho 373-3				Project Coording TRENT, SJ	nator	Price Code	8N		rnaround
Project Designation 200-PW-2/200-PW-4 OU -	- Borehole Soil Sampling	Sampli 200	ing Location -PW-4/Retention Basin -	- C4114				SAF No. F03-006	A	Air Quality		45	Days
Ice Chest No.	SEE OSF	Field I	Logbook No. F-N-3361		COA 117504ES	310		Method of Ship Federal Expre					·
Shipped To MYT9-	-3-03 Formerly TMA) Pec	Offsite	e Property No.	A030	340	ę		Bill of Lading/	Air Bill No	o. SEC	OSP	<u>. </u>	
POSSIBLE SAMPLE HAZ	ZARDS/REMARKS	50	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	4C Cool 4C	None	None			
Special Handling and/or			Type of Container	aG	aG	aG aG	aG	aG	aG	aG			
N/A	co0/4C	:1	No. of Container(s)	; 1	1	1	1		1	3/			
			Volume	60mL	250mL	125mL	60m	ıL 125mL	60mL	ny comL			
	SAMPLE ANAI	LYSIS		Pesticides - 8081	Chloro- Herbicides - EPA8151	Chromium Hex - 7196	NO2/N 353.		See item (1) Special Instructions	Tritium - H3			
									1	/			
Sample No.	Matrix *	Sample Date	Sample Time		4						1000		[] A
B17HX4	SOIL	9-3-03		X	×	X	~	X					
B17HX5	SOIL	9-3-0			200	\ \ \ \ \	X	X					
B17HX6		9.400 1 mg	罗 1025	دكــــــــــــــــــــــــــــــــــــ	1200	X	X	X					
B17HX7	SOIL—SOIL—		33	177			- X	_ /	92_				<u> </u>
B17J02	SOIL		03			1 M	73	≨-03.X	/		<u> </u>		
CHAIN OF POSSESSI	ION Date/Fine 1500	Sign/Print				CIAL INSTR		ONS g times (less than 14	4 david marr	he must but the	- 1sh dun to the	al	Matrix *
	Mark 19353	Received By/Store	CERUF#19	13-03 LS	chara	icteristics.	·						S=Solt SE=Sediment SO=Solid
Rolling Ashed By Removed From	# 1 9-4-0314C	Received By Skyr	Chsen Onthra	12940		rechnetium-99; Nickel-63; Nept		n-89,90 Total Sr; I 37	isotopic Tho	rium (Thorium-2	32}; Carbon-1	4; Iodine-	SI=Sludge W = Water O=Oil
Religionistra Barrella (1979)	MUS 9-4-3	Received Bythippe	36 94-0	71 12		sonnel not av inquish samp	des from	n me 3/20				•	A=Air DS=Drum Solids DL=Drum Liquids T=Tissuc
Relinquished By/Removed From 5 3728 9-	Date/Time	Received By/Stored		ate/Time l o o アクショ	ල Ref	r# <u> </u>	9/	<u> </u>					Wi≈Wipe L=Liquid
Relinquished By/Removed From		Received By/Stored	d In Dat	ate/Time		•							V=Vegetation X=Other
Relinquistred By/Removed From	Pate/Time 9.6.03/1025	Received Ry/Stored	ad In Date Date	ate/Time 3/ 10 <i>3</i> 5						· .	:		
LABORATORY Received E SECTION		LI (XZ)XJ/	71001 9-60	7 7003 Titl			· .				D	Date/Time	
FINAL SAMPLE Disposal M DISPOSITION	Aethod .					Dispos	ed By				Ţ	Date/Time	·

FH-Central Plate	au Project	CODY/S	SAMPLE ANALYSIS REQUEST 103-000-2-3										
Collector Pope/Pfister/Hughes			any Contact Hulstrom	Telephor 373-3				Project Coord TRENT, SJ	nator	Price Code	8N		rnaround
Project Designation 200-PW-2/200-PW-4 OU -	Borehole Soil Sampling	Sampl 200	ing Location -PW-4/Retention Basin -	C4115				SAF No. F03-006		Air Quality		45	Days
Ice Chest No.	SEEOSI	Field HN	Logbook No. F-N-3361		COA 117504E	\$10		Method of Ship Federal Expr					
Shipped To LOCKO EBERLINE SERVICES (FO	TMT 9-4.	∙Ø3 Offsite	Property No.	AO:	50 34	t 6		Bill of Lading	'Air Bill I	^{No.} ≤€	<u> </u>	PC	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS				1				Ţ		/	1	
NA Tie To	B17 Joo		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	C Cool 4C	None	None			
Special Handling and/or	Stanona		Type of Container	aG	aG	aG	aG	aG	aG	aG /			
	old 4°C		No. of Container(s)	j	1	1	1	1	1	57			
			Volume	60mL	250mL	125mL	60ml	L 125mL	60mL	J. J			
			-	Pesticides - 8081	Chloro- Herbicides - EPA8151	Chromium Hex - 7196	NO2/NO 353.2		See item (1 Special Instruction	1) ln Tytium - H3			
	SAMPLE ANA	LYSIS							nisitaciio				
			• • ,				,		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(2)			
Sample No.	Matrix *	Sample Date	Sample Time										
B17HX8	SOIL	9-3-03	3 1000	X	×	×	X	×	/				
B17HX9	SOIL	9-3-03	1036	×	×	×	×	×	1				
B17HY4	SOIL	9-4-03	1240	×	×	×	×	×	7				
B17HY5	 SOIL - 1	mg-4-0							/		ļ		1 1
BITTO2	5011	9-3-63	1000	X	X	X	X	X	7		77		
CHAIN OF POSSESSIC)N	Sign/Print				CIAL INSTR							Matrix *
Relinquisting By/Removed From	12010159-30	Received By/Store	Le 20#18	50315	Chara	cknowledges the acteristics.	at holding	times (less than 1	days) may	y not be met by the	e lab due to th	e radi	S=Soll SE*Sediment SO=Solid
Relinguished By/Removed From	194-03 1400	Regeived By Sign	BUDMOME	10/Time 4-0	3 (1)-3	Feelmetium-99; Nickel-63; Nep	Strontium- tunium-23	89,90 - Total Sr;	sotopic Th	orium (Thorlum-2	32), Carbon-	14 , Iodine	SI=Shadge W = Water O=Oil
THE WEET OF THE PROPERTY OF TH	COS_9-4-0348	Received By/Store	=3C 9-40	te/Time)	sonnel not a	vailable i	to					A*Air DS=Drum Solids DL=Drum Liquids
Relinquished By/Removed From	9 - 5 : 3 3	Received By/Store	d In Da	te/Time	Per reli	nquish samp	les from	the 3728		.			T=Tissue WI=Wipe
Relinquished By/Removed From		Received By/Store		te/Time	Re	[# <u>-21-</u> 6"	·			· ·			L=Liquid V=Vegetation X=Other
Relinquished By/Removed Brown	9-603/1025	Received By/Store		te/Time	125			e e e		•	· .		
LABORATORY Received By SECTION	, , , , , , , , ,		, ~ , , , , , , , , , , , , , , , , , ,	Titl							1	Date/Time	
FINAL SAMPLE Disposal Me DISPOSITION	ethod				٠.	Dispos	ed By					Date/Time	

LIONVILLE LABORATORY INCORPORATED IENT: TNU Handro

chase Order/Project:

DATE: 9.6.03

F#) SOW# / Release #:

FUS-006

poratory SDG #:

•	0309640			<u>. </u>	
E	ALL ENTRIES MARKED "NO" MUST BE	EXPLAINED	IN THE COMI	MENT SECTIO	N
	Custody seals on coolers or shipping container intact, signed and dated?	Ø Yes	□ No	□ N/A	see Comment#
2.	Outside of coolers or shipping containers are free from damage?	D Yes	□ No	□ N/A	☐ see Comment#
•	Airbill # recorded?	⊅ Yes	□ No	□ N/A	D see Comment#
1.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic	Yes	□ No	□ N/A	□ see Comment#
	bag and taped to inside lid)	•			
5.	Sample containers are intact?	Ŭ Yes	□ No	□ N/A	D see Comment #
.	Custody seals on sample containers intact, signed and dated?	D Yes	□ No	□ N/A	☐ see Comment #
7	All samples on coc received?	9.6703 PYES	⊠No	• □ N/A	See Comment # 0.0.
i.	All sample label information matches coc?	Ø Yes	□ No	□ N/A	D' see Comment#
·_	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ No	E NIA	D see Comment#
0.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within	Yes	□ No	□ N/A	isee Comment#
	policy. See reverse side for policy)			•	
1.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	D/N/A	🛘 see Comment#
2.	coc signed and dated?	Ø Yes	□ No	□ N/A	🛘 see Comment#
3.	coc will be faxed or emailed to client?	12 Yes	□ No	□ N/A	D see Comment #
4.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	E N/A	☐ see Comment #

ooler # / temp (°C) and Comments:

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aboratory Project Manager:

Data Validation Supporting Documentation

Data Vallitation	Standards traccatile? Standards captrod: Calculation check acceptable? Community	Initial calibrations acceptable: ICV and CCV checks pictors ICV and CCV checks acceptal	Testal calibration				4.7	Sulfas		Andrew Inc		Ca	VALIDATOR	PKOJECT:	TEAST.
Data Vallitation Procedure for Chemical Analysis	de acceptable?	Initial calibrations acceptable? ICV and CCV checks performed on all just suments? ICV and CCV checks acceptable?	2. EXISTEUMENT PERFORMANCE A littal calibrations performed on all instruments.					Z		8			È	in flux	
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3. BLANKS (Levels B. C. D. and E)		
ICB and CCB checks performed for all applicable malyses? (Levels D, E)	Yes No	(X)
ICB and CCB results accompable? (Levels D, E)	Yes No	E)
Laboratory blacks analyzed? correspondentementementalisationes conservation and the master characteristics of the conservation	ON (ESA)	F (
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Comments:		
ACCURACY (Levels C, D, sad B)		
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Performance madit manyib results acceptable?	Yes No Alk	A (
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MOLDING TIMES (all levels)

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7. RESULT QUANTITATION AND DETECTION LIMITS (48 levels)	
Results reported for all requested analyses?	Yes No NA
Resolu supported in the raw data? (Levels D, E)	
Samples properly prepared? (Levels D, E)	
Detection limits meet RDL?	
Transcription/calculation errors? (Levels D, E)	
Comments:	have hich Rt.
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